

Plasma Air Decontamination System (PADS), Phase I

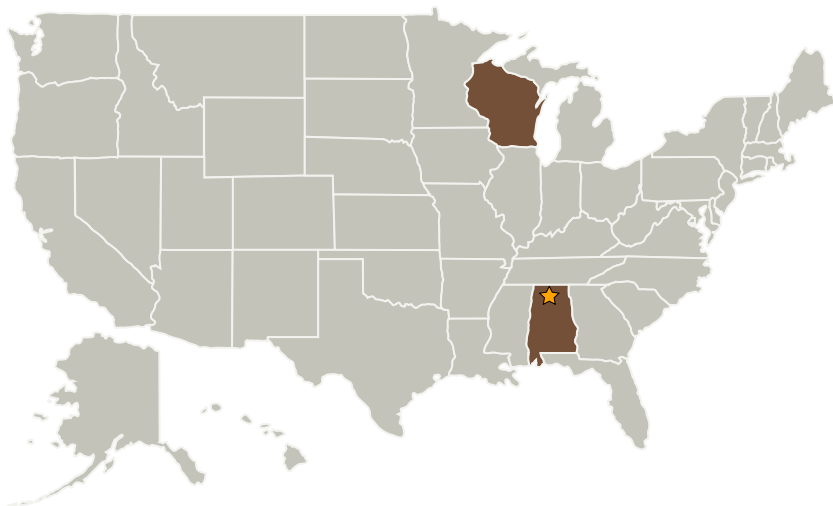
Completed Technology Project (2007 - 2007)



Project Introduction

The proposed Plasma Air Decontamination System (PADS) is a trace contaminant control device based on non-thermal atmospheric pressure plasma technology that operates at ambient pressure and temperature and has the potential to replace the existing Trace Contaminant Control System (TCCS) used on the International Space Station and future exploration vehicles. Non-thermal atmospheric plasma has been proven successful in the destruction of a variety of organic carbons found in space craft environments. The prototype plasma reactor on which the PADS will be based has also shown successful destruction of organic carbon with good power efficiency. Incorporation of this technology would facilitate a decrease in size or total elimination of the intensive re-supply of activated carbon for adsorbent beds, and possible elimination of the high temperature catalytic reactor. This would result in significant savings in launch mass and cost for long duration missions and a reduction in power requirements with the elimination of the catalytic reactor. This system also has great potential to be scaled to a variety of applications, allowing realization of the benefits that come with having systems common to multiple life support systems such as lower mass logistics and spares.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Marshall Space Flight Center (MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Orbital Technologies Corporation	Supporting Organization	Industry Women-Owned Small Business (WOSB)	Madison, Wisconsin

Primary U.S. Work Locations

Alabama	Wisconsin
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - └ TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
 - └ TX06.1.1 Atmosphere Revitalization